What is claimed is:

1. A method for modifying a dielectric constant of a dielectric material, comprising:

relieving said dielectric material, wherein said dielectric constant of said material is reduced.

2. The method of Claim 1, wherein said step of relieving comprises:

forming a plurality of holes in said dielectric material.

3. The method of Claim 2, wherein said holes are spaced about a triangular lattice.

4. The method of Claim 2, wherein said step of forming a plurality of holes comprises drilling a plurality of holes.

5. The method of Claim 2, wherein said holes have a diameter d and a center to center hole spacing S, and wherein $d < \lambda/64$ and $S < \lambda/64$, where λ is equal to a wavelength of a highest operating frequency of an antenna formed using said dielectric material.

6. The method of Claim 5, wherein said step of forming comprises selecting a value for d, wherein an unmodified dielectric constant of said material is equal to e_r, and wherein $S = 0.9523\ d \sqrt{\frac{(e_r - 1)}{(e_r - e_m)}}$, where e_m is a modified dielectric constant of said dielectric material.

7. The method of Claim 1, wherein said reduced dielectric constant is given by $e_m=e_r-0.25(e_r-1)\pi d^2/0.866S^2$, where e_m is a modified dielectric constant of said material, where e_r is the dielectric constant of the material in the absence of holes, where S is the nearest neighbor spacing between the holes, and where d is the diameter of the holes.

8. The method of Claim 2, wherein said holes are formed in at least a first area of said dielectric material and wherein said holes are not formed in at least a second area of said dielectric material, the method further comprising:

forming a first plurality of radiator elements adjacent said at least a first area of said dielectric material;

forming a second plurality of radiator elements adjacent said at least a second area of said dielectric material, wherein at least a portion of an antenna system is formed.

9. The method of Claim 8, wherein a dielectric constant presented to said first plurality of radiator elements is a reduced dielectric constant, and wherein a dielectric constant presented to said second plurality of radiator elements is not reduced.

10. The method of Claim 1, wherein said reduced dielectric constant comprises a reduced effective dielectric constant at a first radio frequency relative to an effective dielectric constant at said first radio frequency of said dielectric material absent modification.

11. An antenna apparatus, comprising:

a dielectric material having at least a first relieved portion, wherein a dielectric constant of said dielectric material is modified in an area of said at least a first relieved portion; and

at least a first radiator element interconnected to said dielectric material.

12. The apparatus of Claim 11, wherein said at least a first radiator element is on a first side of said dielectric material, said antenna further comprising a ground plane on a second side of said dielectric material.

13. The apparatus of Claim 11, wherein said at least a first relieved portion of said dielectric material comprises a hole.

14. The apparatus of Claim 11, wherein said at least a first relieved portion of said dielectric material comprises a plurality of holes.

15. The apparatus of Claim 14, wherein said plurality of holes are arranged in a triangular pattern.

16. The apparatus of Claim 14, wherein said plurality of holes are arranged in an equilateral triangular pattern.

17. The apparatus of Claim 11, wherein said dielectric constant of said dielectric material in an area of said at least a first relieved portion is equal to e_m, wherein $e_m = e_r - 0.25(e_r - 1)\pi d^2/0.866S^2$, where e_r is the dielectric constant of said dielectric material without modification, where S is a center to center spacing between said holes, and where d is a diameter of said holes.

18. The apparatus of Claim 15, wherein said plurality of holes have a diameter d and a center to center hole spacing S, and wherein $d < \lambda/64$ and $S < \lambda/64$, where λ is equal to a wavelength of a highest operating frequency of said antenna.

19. The apparatus of Claim 18, wherein S is greater than d.

20. The apparatus of Claim 15, wherein said unmodified dielectric constant of said dielectric material is equal to e_r, and wherein $S = 0.9523\, d \sqrt{\frac{(e_r - 1)}{(e_r - e_m)}}$, where e_m is a modified dielectric constant of said dielectric material, where S is a center to center spacing between holes, and where d is a diameter of the holes.

21. The apparatus of Claim 11, wherein said dielectric material comprises a sheet of dielectric material.

22. The apparatus of Claim 11, further comprising a plurality of antenna elements interconnected to at least a first surface of said dielectric material.

23. The apparatus of Claim 11, further comprising:

a first plurality of antenna elements comprising a first array on a first surface of said dielectric material, said first plurality of radiator elements including said first radiator element; and

a second plurality of antenna elements comprising a second array on said first surface of said dielectric material and interlaced with said first plurality of antenna elements.

24. The apparatus of Claim 23, wherein said dielectric material is relieved in areas corresponding to said first plurality of antenna elements, wherein a first dielectric constant is presented to said first plurality of antenna elements, and wherein a second dielectric constant is presented to said second plurality of antenna elements.

25. The apparatus of Claim 24, wherein said dielectric material is not relieved in areas corresponding to said second plurality of antenna elements.

26. The apparatus of Claim 24, wherein said first and second arrays are arranged about first and second rectangular lattices having a first lattice spacing.

27. The apparatus of Claim 26, wherein said first array has a first frequency of operation (f_1), wherein said second array has a second frequency of operation (f_2), wherein said first dielectric constant is equal to er_1, and wherein said second dielectric constant (e_{r2}) is given by the expression $e_{r2}=e_{r1}*(f_1/f_2)^2$.

28. The apparatus of Claim 23, wherein an area occupied by said first array substantially overlaps an area occupied by said second array.

29. The apparatus of Claim 23, further comprising a plurality of signal amplifiers, wherein at least one amplifier is associated with each radiator element of said first and second arrays.

30. An antenna apparatus, comprising:

means for radiating at least a first radio frequency;

means for providing at least a first dielectric constant adjacent a first side of said means for radiating at least a first radio frequency, wherein at least a portion of said means for providing at least a first dielectric constant is relieved adjacent said means for radiating at least a first radio frequency; and

means for providing a ground plane on a second side of said dielectric means.

31. The apparatus of Claim 30, further comprising:

means for radiating at least a second radio frequency; and

means for providing at least a second dielectric constant adjacent said means for radiating at least a second radio frequency.

32. The apparatus of Claim 31, wherein at least a portion of said means for providing at least a second dielectric constant is relieved adjacent said means for radiating at least a second radio frequency.

33. The apparatus of Claim 31, wherein said means for providing at least a first dielectric constant is integral with said means for providing at least a second dielectric constant.

34. A method for providing an antenna component, comprising:

selecting a first radio frequency having a first wavelength (λ_1);

selecting a material having a dielectric constant (e_r) that is greater than at least a first desired dielectric constant;

selecting a first hole diameter (d_1) that is less than the first wavelength (λ_1); and

forming a number of holes of the first selected diameter (d_1) in the selected material to obtain a modified dielectric constant (e_{m1}) that is less than the dielectric constant (e_r) of the selected material without the holes.

35. The method of Claim 34, further comprising:

calculating a hole spacing (S_1), wherein $S_1 = c^* \, d_1{}^* \sqrt{\frac{(e_r - 1)}{(e_r - e_m)}}$.

36. The method of Claim 35, wherein c is a constant having a value less than one.

37. The method of Claim 35, wherein c has a value equal to about 0.9523.

38. The method of Claim 35, wherein the hole spacing (S_1) is a center to center spacing of adjacent holes.

39. The method of Claim 34, wherein the selected first hole diameter (d_1) is less than $\lambda_1/64$.

40. The method of Claim 35, wherein the holes are located such that they have a center to center hole spacing (S_1) that is less than $\lambda_1/64$.

41. The method of Claim 34, wherein the holes are arranged in an equilateral triangular pattern in the selected material.

42. The method of Claim 34, wherein the holes having the first selected diameter (d_1) are formed in at least a first area of the selected material, wherein holes are not formed in at least a second area of the selected material, said method further comprising:

selecting a second radio frequency having a second wavelength (λ_2); and

selecting a second desired dielectric constant, wherein the dielectric constant of the material (e_r) is equal to the second desired dielectric constant.

43. The method of Claim 34, wherein the holes having the first selected diameter (d_1) are formed in at least a first area of the selected material, the method further comprising:

selecting a second radio frequency having a second wavelength (λ_2);

selecting a second hole diameter (d_2) that is less than the second wavelength (λ_2);

forming a number of holes of the second selected diameter (d_2) in a piece of the selected material to obtain a second modified dielectric constant (e_{m2}) that is less than the dielectric constant (e_r) of the selected material without the holes, wherein the holes of the second selected diameter (d_2) are formed in at least a second area of the material.

44. The method of Claim 43, wherein the holes of the first selected diameter (d_1) and the holes of the second selected diameter (d_2) are formed in the same piece of the selected material.

45. The method of Claim 34, further comprising:

selecting a second radio frequency having a second wavelength (λ_2);

selecting a desired scan range for the first radio frequency;

calculating a first lattice spacing between a first plurality of radiator elements associated with said first radio frequency, wherein said first lattice spacing comprises a function of the wavelength (λ_1) of said first radio frequency and the selected scan range of the first radio frequency;

selecting a desired scan range for the second radio frequency;

calculating a second lattice spacing between a second plurality of radiator elements associated with the second radio frequency, wherein the second lattice spacing comprises a function of the wavelength (λ_2) of the second radio frequency and the selected scan range of the second radio frequency;

determining a maximum lattice spacing, wherein the maximum lattice spacing is the smaller of the first and second lattice spacings, wherein the first plurality of radiator elements is arranged about a square lattice, wherein the first plurality of radiator elements have a center to center spacing equal to the maximum lattice spacing, wherein the second plurality of radiator elements is arranged about a square lattice, and wherein the second plurality of radiator elements have a center to center spacing equal to the maximum lattice spacing;

calculating a dielectric constant for the second plurality of radiator elements, wherein the second substrate dielectric constant comprises a function of the modified dielectric constant, the first center frequency, and the second center frequency;

calculating an effective size of the radiator elements included in the first plurality of radiator elements and the radiator elements included in the second plurality of radiator elements, wherein the effective size comprises a function of a wavelength of a one of the first and second frequencies and a corresponding one of the first and second substrate dielectric constants;

calculating a physical size of the radiator elements included in the first plurality of radiator elements; and

calculating a physical size of the radiator elements included in the second plurality of radiator elements.